ABSTRACT OF THE DISCLOSURE

The present invention provides a regenerable catalyst composition suitable for entrapping SO_x. The composition of the invention comprises a copper oxide having the formula (Cu/(A oxide) where A oxide is SiO_2, $Zr-SiO_2$, Al_2O_3, $TiO_2-Al_2O_3$, ZrO_2 and In_2O_3 or mixtures thereof. Copper loading may vary from about 10 to 60 mol% and is preferably about 25 mol%. The catalyst composition adsorbs SO_x as metal sulfate under lean conditions and desorbs accumulated SO_x as SO_2 under rich conditions. Such reversible SO_x trap are able to operate under conventional NO_x trap operating conditions to prevent sulfur poisoning of the NO_x trap. Furthermore, these traps may be regenerated under rich conditions at 300-450°C. In another embodiment of the present invention, an irreversible SO_x trap capable of collecting SO_x under lean conditions is provided. The traps of this embodiment include praseodymia, zirconia-praseodymia and mixed manganese-yttria and mixtures thereof.